

REMARKS

The Examiner is thanked for the thorough examination and search of the subject patent application.

Claims 44, 48, 49 and 60-68 are pending; Claims 1-43, 45-47 and 50-59 have been canceled. No new matter is believed to have been added.

The present patent application is related to copending application No. 12/260,086, filed on Oct. 28, 2008.

Response to Claim Rejections under 35 U.S.C. 103

Applicants respectfully traverse the rejections for at least the reasons set forth below.

Response to Claims 44, 48, 49 and 60

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As previously presented, independent claim 44 is recited below:

44. A circuit component comprising:

a substrate;

a semiconductor chip over a top surface of said substrate, wherein said semiconductor chip has a front surface facing said top surface of said substrate and a back surface opposite to said front surface, wherein said semiconductor chip comprises multiple pads at said front surface;

an identity of product directly on said back surface of said semiconductor chip;

multiple metal bumps between said multiple pads of said semiconductor chip and said top surface of said substrate; and
an optically transparent layer directly over said identity of product, wherein said identity of product is visible through said optically transparent layer.

Section I:

Reconsiderations of Claims 44, 48, 49 and 60 rejected under 35 U.S.C. 103(a) as being unpatentable over Hikita et al. (U.S. Pat. No. 6,476,499) in view of Hiromasa (JP62169448) and of Claims 48, 49 and 60 rejected under 35 U.S.C. 103(a) as being unpatentable over Hikita et al. in view of Hiromasa, further in view of the flip-chip technology, are requested in accordance with the following remarks.

Applicants respectfully assert that the chip package claimed in Claim 44 patentably distinguishes over the citations by Hikita et al. (U.S. Pat. No. 6,476,499) in view of Hiromasa (JP62169448).

The Examiner considers that “At the time the invention was made, it would have been obvious to one of ordinary skill in the art to combine the teachings of Hikita et al. with those of Hiromasa in order to apply the teachings of transparent protective coatings over identification information. One would have been motivated to do this in order to protect/cover the information while still permitting it to be visible.” ~ *See lines 14-18 on page 3, in the last Office Action mailed May 13, 2009* ~ Furthermore, the Examiner notes that “Hiromasa teaches a transparent resin (4) that overlays the identification information beneath it, for protection. As Hikita et al. teaches identification information but not a coating for protection, applying such a coating from

the semiconductor package of Hiromasa to the semiconductor chip surface of Hikita et al. would have been obvious for protection of the notation/information, and such application being within the ordinary skill in the art. The package (2) of Hiromasa is not being relied upon to be transparent, and it is not envisioned that the package of the semiconductor chip of Hikita et al. would need to be transparent. The transparent resin which coats the identification information is the element relied upon for transparency, not the semiconductor chip/package.” ~ *See lines 6-13 on page 10, in the last Office Action mailed May 13, 2009 ~*

Applicants respectfully traverse the Examiner’s opinion. Hikita et al. teach that “information on the respective semiconductor chips incorporated in the chip-on-chip structure of the semiconductor device can easily be checked.” ~ *See col. 18, lines 42-44, in U.S. Pat. No. 6,476,499 ~* However, Hikita et al. fail to teach, hint or suggest the claimed subject matter that an identity of product directly on a back surface of a semiconductor chip is visible through an optically transparent layer directly over the identity of product, as currently claimed in Claim 44. The identity of product is difficult to be removed from the semiconductor chip by a polishing process because the semiconductor chip could be damaged when polishing the semiconductor chip. The advantage is believed not to be anticipated by Hikita et al.’s teaching based on the following reason. In col. 17, lines 53-61, in Pat. No. 6,476,499, Hikita et al. teach that “the specific informational notations on the back face 54 of the semiconductor chip 5 can be read by removing a mold package from the semiconductor device”, which teaches away from the characteristic of the claimed subject matter that an identity of product directly on a back surface of a semiconductor chip is visible through an optically transparent layer directly over the identity of product, as currently claimed in Claim 44, because the identity of product can be visible

through the optically transparent layer and the optically transparent layer is not required to be removed.

Furthermore, applicants respectfully traverse the Examiner's opinion since the claimed subject matters cannot be attained even under Hikita et al.'s teaching in view of Hiromasa's teaching. Under Hikita et al.'s teaching in view of Hiromasa's teaching, one skilled in the art could come up with the concept of forming Hiromasa's package material 2 on Hikita et al.'s chip 2, next printing an identity of product and manufacturer or a bar code on a bottom of a recessed part 3 in Hiromasa's package material 2, and then applying Hiromasa's transparent resin 4 onto the identity of product and manufacturer or the bar code. In this case, Hikita et al.'s identity of product and manufacturer or Hikita et al.'s bar code shown in Fig. 15 or 16A directly on a back surface 24 of Hikita et al.'s chip 2 is covered with Hiromasa's package material 2, and is not believed to be visible through Hiromasa's package material 2 because Hiromasa's package material 2 is not suggested to be optically transparent. In consequence, the claimed subject matter that "an identity of product directly on a back surface of a semiconductor chip is visible through an optically transparent layer directly over the identity of product", as currently claimed in Claim 44 is believed to be not obvious over Hikita et al.'s teaching in view of Hiromasa's teaching.

However, the Examiner disagrees with the Applicants' argument that Hiromasa's package material 2 is not transparent. ~ See lines 9 and 10 on page 9, in the last Office Action mailed May 13, 2009 ~

Applicants respectfully traverse the Examiner's opinion because Hiromasa's package material 2 is not suggested to be transparent. Hiromasa teaches that a transparent resin 4 can be formed on markings printed on the package material 2, but Hiromasa fails to teach, hint or suggest that the material of the transparent resin 4 can be identical to that of the package material 2. Typically, Hiromasa's package material 2 can not be optically transparent because a light should be prevented from being illuminated on an active surface of Hiromasa's semiconductor chip 7. If a light is illuminated on the active surface of Hiromasa's semiconductor chip 7, Hiromasa's semiconductor chip 7 could malfunction. If the Examiner considers that Hiromasa's package material 2 is suggested to be transparent, showing an evidence is respectfully requested.

In Figs. 1 and 2 in JP62169448, Hiromasa teaches that a marking is printed on a package material 2. The activities of illegal remarking can be easily performed on Hiromasa's chip package. The counterfeiters can readily remove the marking printed on Hiromasa's package material 2 by a polishing process, and then print a fake brand name on Hiromasa's package material 2. However, regarding the characteristic of the claimed subject matter that an identity of product directly on a back surface of a semiconductor chip is visible through an optically transparent layer directly over the identity of product, as currently claimed in Claim 44, the identity of product is difficult to be removed from the semiconductor chip by a polishing process because the semiconductor chip could be damaged when polishing the semiconductor chip. The advantage is believed to be not obvious over Hikita et al.'s teaching in view of Hiromasa's teaching.

Withdrawal of rejection under 35 U.S.C. 103(a) to Claim 44 is respectfully requested.

Applicants respectfully submit independent Claim 44 patentably distinguishes over the prior art references, and should be allowed. For at least the same reasons, dependent Claims 48, 49 and 60 patentably define over the prior art as well.

Section II:

Reconsiderations of Claims 44, 48, 49 and 60 rejected under 35 U.S.C. 103(a) as being unpatentable over Hyozo et al. (U.S. Pat. No. 5,894,172) in view of Hiromasa (JP62169448), further in view of the flip-chip technology are requested in accordance with the following remarks.

Applicants respectfully assert that the chip package claimed in Claim 44 patentably distinguishes over the citations by Hyozo et al. (U.S. Pat. No. 5,894,172) in view of Hiromasa (JP62169448), further in view of the flip-chip technology.

The Examiner considers that “At the time the invention was made, it would have been obvious to one of ordinary skill in the art to combine the teachings of Hyozo et al./Flip Chip with those of Hiromasa in order to apply the teachings of transparent protective coatings over identification information. One would have been motivated to do this to protect the information while still permitting it to be read (transparent).” ~ See lines 1-5 on page 7, in the last Office Action mailed May 13, 2009 ~

Applicants respectfully traverse the Examiner's opinion. Hyozo et al. teach that information is on bare chip 1. ~ *See Figs. 1-16 in U.S. Pat. No. 5,894,172* ~ However, Hyozo et al. fail to teach, hint or suggest the claimed subject matter that an identity of product directly on a back surface of a semiconductor chip is visible through an optically transparent layer directly over the identity of product, as currently claimed in Claim 44. The identity of product is difficult to be removed from the semiconductor chip by a polishing process because the semiconductor chip could be damaged when polishing the semiconductor chip. The advantage is believed not to be anticipated by Hyozo et al.'s teaching based on the following reasons. In Figs. 30 and 31 and in col. 10, lines 61-67, in Pat. No. 5,894,172, Hyozo et al. teach that if a laminate 22 covers a chip 1, a type name 8 is printed on a surface of the laminate 22, but not printed on the chip 1. The activities of illegal remarking can be easily performed on Hyozo et al.'s chip package. The counterfeiters can readily remove the marking printed on the surface of Hyozo et al.'s laminate 22 by a polishing process, and then print a fake brand name on Hyozo et al.'s laminate 22. However, regarding the characteristic of the claimed subject matter that an identity of product directly on a back surface of a semiconductor chip is visible through an optically transparent layer directly over the identity of product, as currently claimed in Claim 44, the identity of product is difficult to be removed from the semiconductor chip by a polishing process because the semiconductor chip could be damaged when polishing the semiconductor chip.

Furthermore, applicants respectfully traverse the Examiner's opinion since the claimed subject matters cannot be attained even under Hyozo et al.'s teaching in view of Hiromasa's teaching and the flip-chip technology. Under Hyozo et al.'s teaching in view of Hiromasa's teaching, further in view of the flip-chip technology, one skilled in the art could come up with

the concept of forming Hiromasa's package material 2 on a back surface of a flip chip, next printing an identity of product and manufacturer or a bar code on a bottom of a recessed part 3 in Hiromasa's package material 2, and then applying Hiromasa's transparent resin 4 onto the identity of product and manufacturer or the bar code. If the identity of product and manufacturer or the bar code is formed directly on a back surface of a flip chip, it would be covered with Hiromasa's package material 2. The identity of product and manufacturer or the bar code is not believed to be visible through Hiromasa's package material 2 because Hiromasa's package material 2 is not suggested to be optically transparent. In consequence, the claimed subject matter that "an identity of product directly on a back surface of a semiconductor chip is visible through an optically transparent layer directly over the identity of product", as currently claimed in Claim 44 is believed to be not obvious over Hyozo et al.'s teaching in view of Hiromasa's teaching, further in view of the flip-chip technology.

However, the Examiner disagrees with the Applicants' argument that Hiromasa's package material 2 is not transparent. ~ See lines 9 and 10 on page 9, in the last Office Action mailed May 13, 2009 ~

Applicants respectfully traverse the Examiner's opinion because Hiromasa's package material 2 is not suggested to be transparent. Hiromasa teaches that a transparent resin 4 can be formed on markings printed on the package material 2, but Hiromasa fails to teach, hint or suggest that the material of the transparent resin 4 can be identical to that of the package material 2. Typically, Hiromasa's package material 2 can not be optically transparent because a light should be prevented from being illuminated on an active surface of Hiromasa's semiconductor

chip 7. If a light is illuminated on the active surface of Hiromasa's semiconductor chip 7, Hiromasa's semiconductor chip 7 could malfunction. If the Examiner considers that Hiromasa's package material 2 is suggested to be transparent, showing an evidence is respectfully requested.

Furthermore, in Figs. 1 and 2 in JP62169448, Hiromasa teaches that a marking is printed on a package material 2. The activities of illegal remarking can be easily performed on Hiromasa's chip package. The counterfeiters can readily remove the marking printed on Hiromasa's package material 2 by a polishing process, and then print a fake brand name on Hiromasa's package material 2. However, regarding the characteristic of the claimed subject matter that an identity of product directly on a back surface of a semiconductor chip is visible through an optically transparent layer directly over the identity of product, as currently claimed in Claim 44, the identity of product is difficult to be removed from the semiconductor chip by a polishing process because the semiconductor chip could be damaged when polishing the semiconductor chip. The advantage is believed to be not obvious over Hyozo et al.'s teaching in view of Hiromasa's teaching, further in view of the flip-chip technology.

Withdrawal of rejection under 35 U.S.C. 103(a) to Claim 44 is respectfully requested.

Applicants respectfully submit independent Claim 44 patentably distinguishes over the prior art references, and should be allowed. For at least the same reasons, dependent Claims 48, 49 and 60 patentably define over the prior art as well.

Response to Claims 61-64

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As previously presented, independent claim 61 is recited below:

61. A circuit component comprising:

a substrate;

a semiconductor chip over a top surface of said substrate, wherein said semiconductor chip has a front surface facing said top surface of said substrate and a back surface opposite to said front surface, and wherein said semiconductor chip comprises multiple pads at said front surface;

an identity of manufacturer directly on said back surface of said semiconductor chip;

multiple metal bumps between said multiple pads of said semiconductor chip and said top surface of said substrate; and

an optically transparent layer directly over said identity of manufacturer, wherein said identity of manufacturer is visible through said optically transparent layer.

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Section I:

Reconsiderations of Claims 61-64 rejected under 35 U.S.C. 103(a) as being unpatentable over Hikita et al. (U.S. Pat. No. 6,476,499) in view of Hiromasa (JP62169448) and of Claims 61-64 rejected under 35 U.S.C. 103(a) as being unpatentable over Hikita et al. in view of Hiromasa, further in view of the flip-chip technology, are requested in accordance with the following remarks.

Applicants respectfully assert that the chip package claimed in Claim 61 patentably distinguishes over the citations by Hikita et al. (U.S. Pat. No. 6,476,499) in view of Hiromasa (JP62169448), further in view of the flip-chip technology.

The Examiner considers that “At the time the invention was made, it would have been obvious to one of ordinary skill in the art to combine the teachings of Hikita et al. with those of

Hiromasa in order to apply the teachings of transparent protective coatings over identification information. One would have been motivated to do this in order to protect/cover the information while still permitting it to be visible.” ~ *See lines 14-18 on page 3, in the last Office Action mailed May 13, 2009* ~ Furthermore, the Examiner notes that “Hiromasa teaches a transparent resin (4) that overlays the identification information beneath it, for protection. As Hikita et al. teaches identification information but not a coating for protection, applying such a coating from the semiconductor package of Hiromasa to the semiconductor chip surface of Hikita et al. would have been obvious for protection of the notation/information, and such application being within the ordinary skill in the art. The package (2) of Hiromasa is not being relied upon to be transparent, and it is not envisioned that the package of the semiconductor chip of Hikita et al. would need to be transparent. The transparent resin which coats the identification information is the element relied upon for transparency, not the semiconductor chip/package.” ~ *See lines 6-13 on page 10, in the last Office Action mailed May 13, 2009* ~

Applicants respectfully traverse the Examiner’s opinion. Hikita et al. teach that “information on the respective semiconductor chips incorporated in the chip-on-chip structure of the semiconductor device can easily be checked.” ~ *See col. 18, lines 42-44, in U.S. Pat. No. 6,476,499* ~ However, Hikita et al. fail to teach, hint or suggest the claimed subject matter that an identity of manufacture directly on a back surface of a semiconductor chip is visible through an optically transparent layer directly over the identity of manufacture, as currently claimed in Claim 61. The identity of manufacture is difficult to be removed from the semiconductor chip by a polishing process because the semiconductor chip could be damaged when polishing the semiconductor chip. The advantage is believed not to be anticipated by Hikita et al.’s teaching

based on the following reason. In col. 17, lines 53-61, in Pat. No. 6,476,499, Hikita et al. teach that “the specific informational notations on the back face 54 of the semiconductor chip 5 can be read by removing a mold package from the semiconductor device”, which teaches away from the characteristic of the claimed subject matter that an identity of manufacture directly on a back surface of a semiconductor chip is visible through an optically transparent layer directly over the identity of manufacture, as currently claimed in Claim 61, because the identity of manufacture can be visible through the optically transparent layer and the optically transparent layer is not required to be removed.

Furthermore, applicants respectfully traverse the Examiner’s opinion since the claimed subject matters cannot be attained even under Hikita et al.’s teaching in view of Hiromasa’s teaching. Under Hikita et al.’s teaching in view of Hiromasa’s teaching, one skilled in the art could come up with the concept of forming Hiromasa’s package material 2 on Hikita et al.’s chip 2 provided in a flip-chip type, next printing an identity of product and manufacturer or a bar code on a bottom of a recessed part 3 in Hiromasa’s package material 2, and then applying Hiromasa’s transparent resin 4 onto the identity of product and manufacturer or the bar code. In this case, Hikita et al.’s identity of product and manufacturer or Hikita et al.’s bar code shown in Fig. 15 or 16A directly on a back surface 24 of Hikita et al.’s chip 2 is covered with Hiromasa’s package material 2, and is not believed to be visible through Hiromasa’s package material 2 because Hiromasa’s package material 2 is not suggested to be optically transparent. In consequence, the claimed subject matter that “an identity of manufacture directly on a back surface of a semiconductor chip is visible through an optically transparent layer directly over the identity of

manufacture”, as currently claimed in Claim 61 is believed to be not obvious over Hikita et al.’s teaching in view of Hiromasa’s teaching.

However, the Examiner disagrees with the Applicants’ argument that Hiromasa’s package material 2 is not transparent. ~ See lines 9 and 10 on page 9, in the last Office Action mailed May 13, 2009 ~

Applicants respectfully traverse the Examiner’s opinion because Hiromasa’s package material 2 is not suggested to be transparent. Hiromasa teaches that a transparent resin 4 can be formed on markings printed on the package material 2, but Hiromasa fails to teach, hint or suggest that the material of the transparent resin 4 can be identical to that of the package material 2. Typically, Hiromasa’s package material 2 can not be optically transparent because a light should be prevented from being illuminated on an active surface of Hiromasa’s semiconductor chip 7. If a light is illuminated on the active surface of Hiromasa’s semiconductor chip 7, Hiromasa’s semiconductor chip 7 could malfunction. If the Examiner considers that Hiromasa’s package material 2 is suggested to be transparent, showing an evidence is respectfully requested.

Furthermore, in Figs. 1 and 2 in JP62169448, Hiromasa teaches that a marking is printed on a package material 2. The activities of illegal remarking can be easily performed on Hiromasa’s chip package. The counterfeiters can readily remove the marking printed on Hiromasa’s package material 2 by a polishing process, and then print a fake brand name on Hiromasa’s package material 2. However, regarding the characteristic of the claimed subject matter that an identity of manufacture directly on a back surface of a semiconductor chip is

visible through an optically transparent layer directly over the identity of manufacture, as currently claimed in Claim 61, the identity of manufacture is difficult to be removed from the semiconductor chip by a polishing process because the semiconductor chip could be damaged when polishing the semiconductor chip. The advantage is believed to be not obvious over Hikita et al.'s teaching in view of Hiromasa's teaching, further in view of the flip-chip technology.

Withdrawal of rejection under 35 U.S.C. 103(a) to Claim 61 is respectfully requested.

Applicants respectfully submit independent Claim 61 patentably distinguishes over the prior art references, and should be allowed. For at least the same reasons, dependent Claims 62-64 patentably define over the prior art as well.

Section II:

Reconsiderations of Claims 62-64 rejected under 35 U.S.C. 103(a) as being unpatentable over Hyozo et al. (U.S. Pat. No. 5,894,172) in view of Hiromasa (JP62169448), further in view of the flip-chip technology are requested in accordance with the following remarks.

Applicants respectfully assert that the chip package claimed in Claim 61 patentably distinguishes over the citations by Hyozo et al. (U.S. Pat. No. 5,894,172) in view of Hiromasa (JP62169448), further in view of the flip-chip technology.

The Examiner considers that "At the time the invention was made, it would have been obvious to one of ordinary skill in the art to combine the teachings of Hyozo et al./Flip Chip with

those of Hiromasa in order to apply the teachings of transparent protective coatings over identification information. One would have been motivated to do this to protect the information while still permitting it to be read (transparent).” ~ *See lines 1-5 on page 7, in the last Office Action mailed May 13, 2009 ~*

Applicants respectfully traverse the Examiner’s opinion. Hyozo et al. teach that information is on bare chip 1. ~ *See Figs. 1-16 in U.S. Pat. No. 5,894,172 ~* However, Hyozo et al. fail to teach, hint or suggest the claimed subject matter that an identity of manufacture directly on a back surface of a semiconductor chip is visible through an optically transparent layer directly over the identity of manufacture, as currently claimed in Claim 61. The identity of manufacture is difficult to be removed from the semiconductor chip by a polishing process because the semiconductor chip could be damaged when polishing the semiconductor chip. The advantage is believed not to be anticipated by Hyozo et al.’s teaching based on the following reasons. In Figs. 30 and 31 and in col. 10, lines 61-67, in Pat. No. 5,894,172, Hyozo et al. teach that if a laminate 22 covers a chip 1, a type name 8 is printed on a surface of the laminate 22, but not printed on the chip 1. The activities of illegal remarking can be easily performed on Hyozo et al.’s chip package. The counterfeiters can readily remove the marking printed on the surface of Hyozo et al.’s laminate 22 by a polishing process, and then print a fake brand name on Hyozo et al.’s laminate 22. However, regarding the characteristic of the claimed subject matter that an identity of manufacture directly on a back surface of a semiconductor chip is visible through an optically transparent layer directly over the identity of manufacture, as currently claimed in Claim 61, the identity of manufacture is difficult to be removed from the semiconductor chip by

a polishing process because the semiconductor chip could be damaged when polishing the semiconductor chip.

Furthermore, applicants respectfully traverse the Examiner's opinion since the claimed subject matters cannot be attained even under Hyozo et al.'s teaching in view of Hiromasa's teaching, further in view of the flip-chip technology. Under Hyozo et al.'s teaching in view of Hiromasa's teaching, further in view of the flip-chip technology, one skilled in the art could come up with the concept of forming Hiromasa's package material 2 on a back surface of a flip chip, next printing an identity of product and manufacturer or a bar code on a bottom of a recessed part 3 in Hiromasa's package material 2, and then applying Hiromasa's transparent resin 4 onto the identity of product and manufacturer or the bar code. If the identity of product and manufacturer or the bar code is formed directly on a back surface of a flip chip, it would be covered with Hiromasa's package material 2. The identity of product and manufacturer or the bar code is not believed to be visible through Hiromasa's package material 2 because Hiromasa's package material 2 is not suggested to be optically transparent. In consequence, the claimed subject matter that "an identity of manufacture directly on a back surface of a semiconductor chip is visible through an optically transparent layer directly over the identity of manufacture", as currently claimed in Claim 61, is believed to be not obvious over Hyozo et al.'s teaching in view of Hiromasa's teaching, further in view of the flip-chip technology.

However, the Examiner disagrees with the Applicants' argument that Hiromasa's package material 2 is not transparent. ~ See lines 9 and 10 on page 9, in the last Office Action mailed May 13, 2009 ~

Applicants respectfully traverse the Examiner's opinion because Hiromasa's package material 2 is not suggested to be transparent. Hiromasa teaches that a transparent resin 4 can be formed on markings printed on the package material 2, but Hiromasa fails to teach, hint or suggest that the material of the transparent resin 4 can be identical to that of the package material 2. Typically, Hiromasa's package material 2 can not be optically transparent because a light should be prevented from being illuminated on an active surface of Hiromasa's semiconductor chip 7. If a light is illuminated on the active surface of Hiromasa's semiconductor chip 7, Hiromasa's semiconductor chip 7 could malfunction. If the Examiner considers that Hiromasa's package material 2 is suggested to be transparent, showing an evidence is respectfully requested.

Furthermore, in Figs. 1 and 2 in JP62169448, Hiromasa teaches that a marking is printed on a package material 2. The activities of illegal remarking can be easily performed on Hiromasa's chip package. The counterfeiters can readily remove the marking printed on Hiromasa's package material 2 by a polishing process, and then print a fake brand name on Hiromasa's package material 2. However, regarding the characteristic of the claimed subject matter that an identity of manufacture directly on a back surface of a semiconductor chip is visible through an optically transparent layer directly over the identity of manufacture, as currently claimed in Claim 61, the identity of manufacture is difficult to be removed from the semiconductor chip by a polishing process because the semiconductor chip could be damaged when polishing the semiconductor chip. The advantage is believed to be not obvious over Hyozo et al.'s teaching in view of Hiromasa's teaching, further in view of the flip-chip technology.

Withdrawal of rejection under 35 U.S.C. 103(a) to Claim 61 is respectfully requested.

Applicants respectfully submit independent Claim 61 patentably distinguishes over the prior art references, and should be allowed. For at least the same reasons, dependent Claims 62-64 patentably define over the prior art as well.

Response to Claims 65-68

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As previously presented, independent claim 65 is recited below:

65. A circuit component comprising:

a substrate;

a semiconductor chip over a top surface of said substrate, wherein said semiconductor chip has a front surface facing said top surface of said substrate and a back surface opposite to said front surface, and wherein said semiconductor chip comprises multiple pads at said front surface;

a bar code directly on said back surface of said semiconductor chip;

multiple metal bumps between said multiple pads of said semiconductor chip and said top surface of said substrate; and

an optically transparent layer directly over said bar code, wherein said bar code is visible through said optically transparent layer.

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Section I:

Reconsiderations of Claims 65-68 rejected under 35 U.S.C. 103(a) as being unpatentable over Hikita et al. (U.S. Pat. No. 6,476,499) in view of Hiromasa (JP62169448), of Claims 65-68 rejected under 35 U.S.C. 103(a) as being unpatentable over Hikita et al. in view of Hiromasa, further in view of the flip-chip technology, of Claims 65-68 rejected under 35 U.S.C. 103(a) as being unpatentable over Hikita et al. in view of Hiromasa, further in view of Shimizu

(JP405123237) and of Claims 65-68 rejected under 35 U.S.C. 103(a) as being unpatentable over Hikita et al. in view of Hiromasa, further in view of the flip-chip technology, further in view of Shimizu are requested in accordance with the following remarks.

Applicants respectfully assert that the chip package claimed in Claim 65 patentably distinguishes over the citations by Hikita et al. (U.S. Pat. No. 6,476,499) in view of Hiromasa (JP62169448), further in view of the flip-chip technology, further in view of Shimizu (JP405123237).

The Examiner considers that “At the time the invention was made, it would have been obvious to one of ordinary skill in the art to combine the teachings of Hikita et al. with those of Hiromasa in order to apply the teachings of transparent protective coatings over identification information. One would have been motivated to do this in order to protect/cover the information while still permitting it to be visible.” ~ *See lines 14-18 on page 3, in the last Office Action mailed May 13, 2009* ~ Furthermore, the Examiner notes that “Hiromasa teaches a transparent resin (4) that overlays the identification information beneath it, for protection. As Hikita et al. teaches identification information but not a coating for protection, applying such a coating from the semiconductor package of Hiromasa to the semiconductor chip surface of Hikita et al. would have been obvious for protection of the notation/information, and such application being within the ordinary skill in the art. The package (2) of Hiromasa is not being relied upon to be transparent, and it is not envisioned that the package of the semiconductor chip of Hikita et al. would need to be transparent. The transparent resin which coats the identification information is the element relied upon for transparency, not the semiconductor chip/package.” ~ *See lines 6-13*

on page 10, in the last Office Action mailed May 13, 2009 ~ Furthermore, the Examiner considers that “At the time the invention was made, it would have been obvious to one of ordinary skill in the art to combine the teachings of Hikita et al./Hiromasa/Flip Chip with those of Shimizu. One would have been motivated to do this to protect the barcode while still being readable/visible.” ~ See lines 15-18 on page 8, in the last Office Action mailed May 13, 2009 ~

Applicants respectfully traverse the Examiner’s opinion. Hikita et al. teach that “information on the respective semiconductor chips incorporated in the chip-on-chip structure of the semiconductor device can easily be checked.” ~ *See col. 18, lines 42-44, in U.S. Pat. No. 6,476,499* ~ However, Hikita et al. fail to teach, hint or suggest the claimed subject matter that a bar code directly on a back surface of a semiconductor chip is visible through an optically transparent layer directly over the bar code, as currently claimed in Claim 65. The bar code is difficult to be removed from the semiconductor chip by a polishing process because the semiconductor chip could be damaged when polishing the semiconductor chip. The advantage is believed not to be anticipated by Hikita et al.’s teaching based on the following reason. In col. 17, lines 53-61, in Pat. No. 6,476,499, Hikita et al. teach that “the specific informational notations on the back face 54 of the semiconductor chip 5 can be read by removing a mold package from the semiconductor device”, which teaches away from the characteristic of the claimed subject matter that a bar code directly on a back surface of a semiconductor chip is visible through an optically transparent layer directly over the bar code, as currently claimed in Claim 65 because the bar code can be visible through the optically transparent layer and the optically transparent layer is not required to be removed.

Furthermore, applicants respectfully traverse the Examiner's opinion since the claimed subject matters cannot be attained even under Hikita et al.'s teaching in view of Hiromasa's teaching, further in view of the flip-chip technology, further in view of Shimizu's teaching. Under Hikita et al.'s teaching in view of Hiromasa's teaching, further in view of the flip-chip technology, further in view of Shimizu's teaching, one skilled in the art could come up with the concept of forming Hiromasa's package material 2 on Hikita et al.'s chip 2 provided in a flip-chip type, next printing an identity of product and manufacturer or a bar code on a bottom of a recessed part 3 in Hiromasa's package material 2, and then applying Hiromasa's transparent resin 4 onto the identity of product and manufacturer or the bar code or printing Shimizu's transparent resin on the identity of product and manufacturer or the bar code. In this case, Hikita et al.'s identity of product and manufacturer or Hikita et al.'s bar code shown in Fig. 15 or 16A directly on a back surface 24 of Hikita et al.'s chip 2 is covered with Hiromasa's package material 2, and is not believed to be visible through Hiromasa's package material 2 because Hiromasa's package material 2 is not suggested to be optically transparent. In consequence, the claimed subject matter that "a bar code directly on a back surface of a semiconductor chip is visible through an optically transparent layer directly over the bar code", as currently claimed in Claim 65 is believed to be not obvious over Hikita et al.'s teaching in view of Hiromasa's teaching, further in view of the flip-chip technology, further in view of Shimizu's teaching.

However, the Examiner disagrees with the Applicants' argument that Hiromasa's package material 2 is not transparent. ~ See lines 9 and 10 on page 9, in the last Office Action mailed May 13, 2009 ~

Applicants respectfully traverse the Examiner's opinion because Hiromasa's package material 2 is not suggested to be transparent. Hiromasa teaches that a transparent resin 4 can be formed on markings printed on the package material 2, but Hiromasa fails to teach, hint or suggest that the material of the transparent resin 4 can be identical to that of the package material 2. Typically, Hiromasa's package material 2 can not be optically transparent because a light should be prevented from being illuminated on an active surface of Hiromasa's semiconductor chip 7. If a light is illuminated on the active surface of Hiromasa's semiconductor chip 7, Hiromasa's semiconductor chip 7 could malfunction. If the Examiner considers that Hiromasa's package material 2 is suggested to be transparent, showing an evidence is respectfully requested.

Furthermore, in Figs. 1 and 2 in JP62169448, Hiromasa teaches that a marking is printed on a package material 2. The activities of illegal remarking can be easily performed on Hiromasa's chip package. The counterfeiters can readily remove the marking printed on Hiromasa's package material 2 by a polishing process, and then print a fake brand name on Hiromasa's package material 2. However, regarding the characteristic of the claimed subject matter that a bar code directly on a back surface of a semiconductor chip is visible through an optically transparent layer directly over the bar code, as currently claimed in Claim 65, the bar code is difficult to be removed from the semiconductor chip by a polishing process because the semiconductor chip could be damaged when polishing the semiconductor chip. The advantage is believed to be not obvious over Hikita et al.'s teaching in view of Hiromasa's teaching further in view of the flip-chip technology, further in view of Shimizu's teaching.

Withdrawal of rejection under 35 U.S.C. 103(a) to Claim 65 is respectfully requested.

Applicants respectfully submit independent Claim 65 patentably distinguishes over the prior art references, and should be allowed. For at least the same reasons, dependent Claims 66-68 patentably define over the prior art as well.

Section II:

Reconsiderations of Claims 66-68 rejected under 35 U.S.C. 103(a) as being unpatentable over Hyozo et al. (U.S. Pat. No. 5,894,172) in view of Hiromasa (JP62169448), further in view of the flip-chip technology and of Claims 65-68 rejected under 35 U.S.C. 103(a) as being unpatentable over Hyozo et al. in view of Hiromasa, further in view of the flip-chip technology, further in view of Shimizu (JP405123237)are requested in accordance with the following remarks.

Applicants respectfully assert that the chip package claimed in Claim 65 patentably distinguishes over the citations by Hyozo et al. (U.S. Pat. No. 5,894,172) in view of Hiromasa (JP62169448), further in view of the flip-chip technology, further in view of Shimizu (JP405123237).

The Examiner considers that “At the time the invention was made, it would have been obvious to one of ordinary skill in the art to combine the teachings of Hyozo et al./Flip Chip with those of Hiromasa in order to apply the teachings of transparent protective coatings over identification information. One would have been motivated to do this to protect the information while still permitting it to be read (transparent).” ~ See lines 1-5 on page 7, in the last Office

Action mailed May 13, 2009 ~ The Examiner considers that “At the time the invention was made, it would have been obvious to one of ordinary skill in the art to combine the teachings of Hyozo et al./Hiromasa/Flip Chip with those of Shimizu. One would have been motivated to do this to protect the barcode while still being readable/visible.” ~ *See lines 2-5 on page 9, in the last Office Action mailed May 13, 2009 ~*

Applicants respectfully traverse the Examiner’s opinion. Hyozo et al. teach that information is on bare chip 1. ~ *See Figs. 1-16 in U.S. Pat. No. 5,894,172 ~* However, Hyozo et al. fail to teach, hint or suggest the claimed subject matter that a bar code directly on a back surface of a semiconductor chip is visible through an optically transparent layer directly over the bar code, as currently claimed in Claim 65. The bar code is difficult to be removed from the semiconductor chip by a polishing process because the semiconductor chip could be damaged when polishing the semiconductor chip. The advantage is believed not to be anticipated by Hyozo et al.’s teaching based on the following reasons. In Figs. 30 and 31 and in col. 10, lines 61-67, in Pat. No. 5,894,172, Hyozo et al. teach that if a laminate 22 covers a chip 1, a type name 8 is printed on a surface of the laminate 22, but not printed on the chip 1. The activities of illegal remarking can be easily performed on Hyozo et al.’s chip package. The counterfeiters can readily remove the marking printed on the surface of Hyozo et al.’s laminate 22 by a polishing process, and then print a fake brand name on Hyozo et al.’s laminate 22. However, regarding the characteristic of the claimed subject matter that a bar code directly on a back surface of a semiconductor chip is visible through an optically transparent layer directly over the bar code, as currently claimed in Claim 65, the bar code is difficult to be removed from the semiconductor

chip by a polishing process because the semiconductor chip could be damaged when polishing the semiconductor chip.

Furthermore, applicants respectfully traverse the Examiner's opinion since the claimed subject matters cannot be attained even under Hyozo et al.'s teaching in view of Hiromasa's teaching, further in view of the flip-chip technology, further in view of Shimizu's teaching. Under Hyozo et al.'s teaching in view of Hiromasa's teaching, further in view of the flip-chip technology, further in view of Shimizu's teaching, one skilled in the art could come up with the concept of forming Hiromasa's package material 2 on a back surface of a flip chip, next printing an identity of product and manufacturer or a bar code on a bottom of a recessed part 3 in Hiromasa's package material 2, and then applying Hiromasa's transparent resin 4 onto the identity of product and manufacturer or the bar code or printing Shimizu's transparent resin on the identity of product and manufacturer or the bar code. If the identity of product and manufacturer or the bar code is formed directly on a back surface of a flip chip, it would be covered with Hiromasa's package material 2. The identity of product and manufacturer or the bar code is not believed to be visible through Hiromasa's package material 2 because Hiromasa's package material 2 is not suggested to be optically transparent. In consequence, the claimed subject matter that "a bar code directly on a back surface of a semiconductor chip is visible through an optically transparent layer over the bar code", as currently claimed in Claim 65 is believed to be not obvious over Hyozo et al.'s teaching in view of Hiromasa's teaching, further in view of the flip-chip technology, further in view of Shimizu's teaching.

However, the Examiner disagrees with the Applicants' argument that Hiromasa's package material 2 is not transparent. ~ *See lines 9 and 10 on page 9, in the last Office Action mailed May 13, 2009* ~

Applicants respectfully traverse the Examiner's opinion because Hiromasa's package material 2 is not suggested to be transparent. Hiromasa teaches that a transparent resin 4 can be formed on markings printed on the package material 2, but Hiromasa fails to teach, hint or suggest that the material of the transparent resin 4 can be identical to that of the package material 2. Typically, Hiromasa's package material 2 can not be optically transparent because a light should be prevented from being illuminated on an active surface of Hiromasa's semiconductor chip 7. If a light is illuminated on the active surface of Hiromasa's semiconductor chip 7, Hiromasa's semiconductor chip 7 could malfunction. If the Examiner considers that Hiromasa's package material 2 is suggested to be transparent, showing an evidence is respectfully requested.

Furthermore, in Figs. 1 and 2 in JP62169448, Hiromasa teaches that a marking is printed on a package material 2. The activities of illegal remarking can be easily performed on Hiromasa's chip package. The counterfeiters can readily remove the marking printed on Hiromasa's package material 2 by a polishing process, and then print a fake brand name on Hiromasa's package material 2. However, regarding the characteristic of the claimed subject matter that a bar code directly on a back surface of a semiconductor chip is visible through an optically transparent layer directly over the bar code, as currently claimed in Claim 65, the bar code is difficult to be removed from the semiconductor chip by a polishing process because the semiconductor chip could be damaged when polishing the semiconductor chip. The advantage is

believed to be not obvious over Hyozo et al.'s teaching in view of Hiromasa's teaching, further in view of the flip-chip technology, further in view of Shimizu's teaching.

Withdrawal of rejection under 35 U.S.C. 103(a) to Claim 65 is respectfully requested.

Applicants respectfully submit independent Claim 65 patentably distinguishes over the prior art references, and should be allowed. For at least the same reasons, dependent Claims 66-68 patentably define over the prior art as well.

Conclusion

Some or all of the pending claims are believed to be in condition for allowance. Accordingly, allowance of the claims and the application as a whole are respectfully requested.

It is requested that should Examiner Walsh not find that the Claims are now Allowable that he call the undersigned at 845 452-5863 to overcome any problems preventing allowance.

Respectfully submitted,

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